THE UNITED STATES DISTRICT COURT
FOR THE EASTERN DISTRICT OF TEXAS
MARSHALL DIVISION

HUAWEI TECHNOLOGIES CO. LTD., **Plaintiff,** **v.** **T-MOBILE US, INC. and T-MOBILE USA, INC.,** **Defendants,** **NOKIA SOLUTIONS AND NETWORKS US LLC, NOKIA SOLUTIONS AND NETWORKS OY, TELEFONAKTIEBOLAGET LM ERICSSON, and ERICSSON INC.,** **Intervenors.**	**Civil Action No. 2:16-cv-00052-JRG-RSP** **JURY TRIAL DEMANDED**

PLAINTIFF HUAWEI TECHNOLOGIES CO. LTD.'S
OPENING CLAIM CONSTRUCTION BRIEF

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Plaintiff Huawei is one of the world's leading developers and manufacturers of the network equipment that runs today's high speed LTE cellphone networks.[1] As a result of its substantial investments in innovation, Huawei and its affiliates have developed a patent portfolio of over 50,000 issued patents worldwide. Huawei's patented innovations reflect Huawei's leadership in developing worldwide telecommunications standards, including those offered by the leading standards organization "dealing with telecommunications, broadcasting and other electronic communications networks and services."[2] The four Huawei patents asserted here against network provider T-Mobile are essential to the standards that T-Mobile must practice to provide its national cellphone services.

Specifically, U.S. Patent Nos. 8,069,365 (the "'365 Patent"), 8,719,617 (the "'617 Patent"), 9,235,462 (the "'462 Patent"),[3] and 8,867,339 (the "'339 Patent") are each declared essential to standards used by the telecommunications industry. Their claims contain language that, although readily-understood in the industry, would benefit from constructions that lend full meaning to the terms to clarify the inventions covered by the claims. Huawei's proposed constructions provide this clarity, whereas Defendants' proposed constructions either add unnecessary words or read out essential claim limitations. Accordingly, Huawei respectfully requests that the Court adopt Huawei's proposed constructions.

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[1] http://www.huawei.com/en/about-huawei.

[2] http://www.etsi.org/about/what-we-are. *See also* http://www.3gpp.org/about-3gpp/about-3gpp.

[3] The parties agree that no terms from the '462 patent need to be construed.

I. TECHNOLOGY OVERVIEW

A. Wireless Telecommunication Networks and Their Use

At a high level, wireless telecommunications involve two primary components: (1) a core network; and (2) wireless devices (*e.g.*, smartphones, tablets). The "core network" (the focus of Huawei's asserted patents) manages both the connected wireless devices and the movement of data between them and external networks such as the Internet or the Public Switched Telephone Network (PSTN), which is used to connect callers with the traditional international phone system.

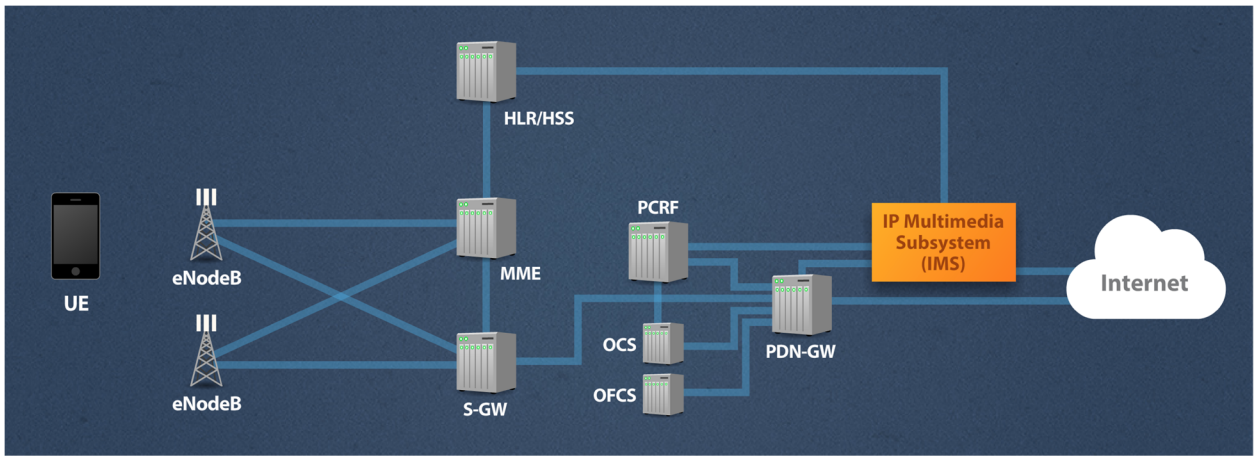
To use a wireless network, a phone or other wireless device first establishes wireless communication with a base station in the network. It next exchanges a series of "control" or "signaling" messages with the base station. For example, the phone identifies itself via its subscriber ID (often contained in a Subscriber Identity Module (SIM card) inserted in the phone), and asks permission to use the network. In turn, the base station consults with other components in the core network to determine whether the phone is authorized to use the network at all, and if so, under what terms (*e.g.*, whether the user's device is on its "home network" or whether it is roaming).

The phone can now establish a voice or data session and exchange data with the network. The actual voice or data travels over the air interface to the base station, then through the core network equipment using a set of resources assigned for that user (known as a "bearer path"). The voice information or other data travels through various components in the core network and the operator's packet network to the Internet, another telecom operator's packet network, or the PSTN.

B. LTE Networks

LTE stands for Long-Term Evolution and is commonly known as a "4G" network. LTE, like all widely-adopted telecommunications systems, operates according to a set of standards

adopted by a standards body, in this case, the 3rd Generation Partnership Project (3GPP).[4] The standards define behaviors of and interfaces among a number of network entities, examples of which are shown in the following diagram and described below:



- eNodeB (evolved Node B)
    - The base station or "tower"
    - Communicates wirelessly with UE - User Equipment (phones, tablets, etc.)
- MME (Mobility Management Entity)
    - When the UE is moving and switches, *e.g.*, from one base station (tower) to another, the MME facilitates maintaining the UE's connection to the network (voice and/or data) during the switch
- IMS (IP Multimedia Subsystem)
    - Architectural framework for delivering IP multimedia services
    - Consists of Call Session Control Function (CSCF) nodes and the HSS (described below)
    - Facilitates the use of IP for packet communications such as traditional telephony, fax, e-mail, Internet access, Web services, Voice over IP, instant messaging, videoconference sessions, and video on demand
- PDN-GW (Packet Data Network Gateway)

[4] 3GPP unites seven telecommunications standard development organizations, including the European Telecommunications Standards Institute (ETSI).

  - Provides an Interface from the telecommunication service provider's LTE network to other portions of the provider's packet data network, such as the Internet or the IMS
  - Assists with mobility and charging the subscriber for the services
- S-GW (Serving Gateway)
  - Routes data between PDN-GW and eNodeBs
  - Assists with mobility and charging the subscriber for the services
- PCRF (Policy and Charging Rules Function)
  - Tracks data usage and generates records for subscriber billing
- OCS or OFCS (Online Charging System or Offline Charging System)
- HSS (Home Subscriber Server)
  - Stores subscriber information
  - Communicates with other nodes to support network access and billing

T-Mobile complies with the applicable 3GPP standards to operate its LTE and other networks because it must—if T-Mobile's networks did not comply with the standards, they would not work properly. For example, many different manufacturers make UEs, and they rely on the network service providers, like T-Mobile, to follow the 3GPP standards so that the UEs will work on the various networks and can communicate with other UEs across the networks.

C. Huawei's Standard Essential Patents

Each of the Asserted Patents relates to ensuring the reliability of wireless networks. The '365 and '617 Patents are directed to improving the efficiency of a network to avoid the potential for delays or interruptions in service. The '339 Patent is directed to recovering invalid data tunnels in a manner that lessens the impact on a network's data transmission performance.

1. *The '365 and '617 Patents*

The '365 and '617 Patents are directed to technology affecting the IMS framework for delivering IP multimedia services, depicted in the figure above in Section I(B). In particular, these patents are directed to aspects of the CSCF and the HSS nodes.

The CSCF is a collection of certain functionalities that can be implemented via hardware or software executing on one or more hardware devices. It is responsible for the signaling that controls the communication of IMS UE with IMS-enhanced services across different network accesses and domains. The CSCF controls the call session establishment and teardown, as well as user authentication, network security, and quality of service. To ease its integration with the Internet, the CSCF uses the commonly-implemented Session Initiation Protocol (SIP) for signaling and controlling multimedia communication sessions such as video and voice calls. The HSS, as described above, stores subscriber information and communicates with other nodes to support network access and billing.

There are three types of CSCF nodes. The Proxy CSCF (P-CSCF) is the first point of contact between a UE and the IMS network. '365 Patent at 1:36-40. All SIP requests and responses to and from the UE pass through the P-CSCF, which validates the correctness of the SIP messages, ensures the security of the SIP messages, and authenticates and asserts the identity of the UE to the IMS. The Serving CSCF (S-CSCF) is a central function of the signaling in the IMS core network. It acts a registrar for UEs and is responsible for processing the location registration of a UE, user authentication, and call routing and processing. Each UE must be successfully registered with an S-CSCF to properly connect to and communicate across the network.

During an initial registration, the Interrogating CSCF (I-CSCF) registers the UE on the network by requesting from the HSS information about the subscriber, assigning the UE to the appropriate S-CSCF, and forwarding the SIP registration request from the P-CSCF to the S-CSCF.

Id. at 1:44-2:14. After a successful initial registration, the S-CSCF has downloaded the subscription data of the user from the HSS and recorded the duration of a registration timer cycle, the address of the P-CSCF from which the registration request originated, and a contact address of the user terminal. *Id.* at 2:15-40. The registration timer cycle is the amount of time the UE will wait to refresh its registration or respond to a change in its registration status. That is, while a UE is connected to a network, it will constantly refresh its registration at certain time intervals to ensure that it is operating based on the most up-to-date information regarding the network.

The '365 and '617 Patents relate to improving a UE's connectivity across the IMS network in the event of a failure or restart of the UE's assigned S-CSCF. In the prior art, the system would rely upon the completion of the registration timer cycle to trigger re-registration. During this re-registration process, the I-CSCF would not receive a response from the failed S-CSCF. The I-CSCF would then trigger a renewed initial registration process by sending a "Request Timeout" to the UE. During this renewed initial registration, the I-CSCF would assign a new S-CSCF, as described above. *See id.* at 3:4-41, Fig. 3.

Because the prior art recovery procedure relied upon a timer, there would be a period prior to expiration in which the S-CSCF would be unavailable and the UE would experience a service interruption. For example, if a call were placed to the UE prior to expiration of the timer cycle, the failed S-CSCF would not respond, or would not have the service information it acquired during the initial registration to forward the request to the UE. This service interruption could be lessened by shortening the registration timer cycle, but too frequent re-registrations increase the processing burden on the network, occupy precious air interface resources, and decrease the battery life of a UE terminal. *See id.* at 3:42-62.

The inventions claimed in the '365 and '617 Patents are directed to avoiding this service interruption. In these inventions, the S-CSCF assigned during the initial registration creates a

backup copy of the data it needs to handle the user's traffic and stores the backup copy in the HSS. This information includes at least the address of the P-CSCF and the contact address of the user terminal. *Id.* at 7:24-40. The S-CSCF obtained this information from the initial registration request, *id.* at 2:35-40, and it would be needed by the S-CSCF to route a call to the UE it services via the P-CSCF. *Id.* at 2:60-3:3. When the UE is called for the first time after the S-CSCF fails or is restarted, the I-CSCF does not need wait for re-registration (*i.e.*, it does not need to wait for the registration timer cycle to complete). Instead, if the I-CSCF determines there was a failure, it assigns a new S-CSCF. *Id.* at 13:23-46. Then, upon receiving the call session set up request, the newly-assigned or restarted S-CSCF can read the backup copy of this data from the HSS and complete the call using the previously backed up data. *Id.* at 13:46-65; 14:3-19; Fig. 7(a) and 7(b). The S-CSCF can then forward the call according to the P-CSCF address and the contact address it acquired from the HSS. *Id.* at 13:59-60; Fig. 7(a). Using Huawei's invention, the user call is completed without experiencing the interruption in service that would previously occur while the I-CSCF waited for the registration cycle to complete and re-registration to occur.

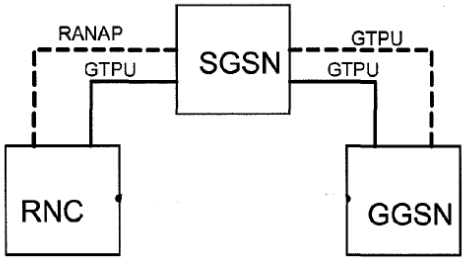
2. *The '339 Patent*

One of the major concerns for architects of 3GPP systems is the performance of data transmission. As user traffic increases, there is also a growing concern for data transmission performance to match that increase. To that end, the 3GPP organization has developed various architectures to improve the efficiency of network components in a 3GPP network. One of those architectures is the "One Tunnel" technology (also called "Direct Tunnel"), which promotes the increased efficiency of communicating information between a UE and the Internet. *See* '339 Patent at 1:31-37.

As explained *supra* in Section I(B), in an LTE network, a UE is connected to the core network via an eNodeB. In the pre-LTE architecture described in the 3GPP Release 7 standards,

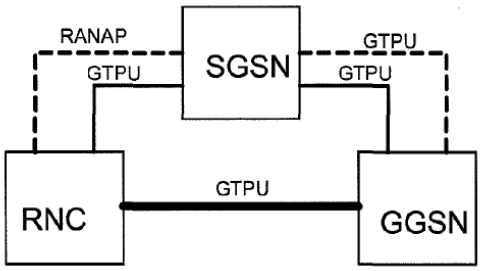
however, the role of the eNodeB is handled instead by a Radio Network Controller (RNC). The RNC connects the UE to the Internet by routing it through a Serving General Packet Radio Service Support Node (SGSN), which in turn connects to a Gateway General Packet Radio Service Support Node (GGSN). *See* '339 Patent at 1:27-50. The GGSN manages the connection to the Internet. *See id.*

The data links between these nodes, known as "tunnels," are depicted below:



Id. at Fig. 1. The traffic is logically separated into "user plane" tunnels that carry the user data (such as voice data), and "control plane" tunnels, which carry the signaling that allows the components to interact. *See id.* at 4:16-24. These tunnels can be further described as "uplink," which carries traffic from the direction of the UE up towards the network, and "downlink," which carries traffic down towards the UE.

In the One Tunnel architecture, the user plane connections between the RNC, the GGSN, and the SGSN are primarily replaced by with a direct logical tunnel from the RNC to the GGSN, shown below:



In the One Tunnel arrangement, "a large part of the user plane traffic is directly transmitted between an RNC and the GGSN via a tunnel . . . as indicated by the thick solid line in" the figure above. *Id.* at 4:17-19. The thinner and dotted lines provide an indication that a small part of the data is still transmitted between the RNC/GGSN and the SGSN. *Id.* at 4:20-24. In a "complete" One Tunnel arrangement, however, there are no such links to the SGSN—all user plane data passes via the direct uplink and downlink tunnels between the RNC and the GGSN. *Id.* at 4:27-33.

In the prior art One Tunnel architecture, if the network suffers an abnormality (such as a reset of an RNC) and its downlink data tunnel becomes invalid, the GGSN deactivates the data structure that contains the user's session information—the data structure is called the "packet data protocol (PDP) context." *Id.* at 2:12-15. Deactivation of the PDP context results in the release of resources (the IP bearer) reserved for the user. *Id.* The system must wait to re-establish the tunnel until the UE signals the SGSN (after some delay) to reactivate PDP contexts and establish a new IP bearer. *Id.* at 2:15-16. This may cause users to appear offline and may also interrupt an application because reactivation of the PDP context may cause the user's IP address to change. *Id.* at 2:17-26.

In the claimed invention, however, if an error occurs in the downlink data tunnel, the RNC, SGSN, and GGSN react in response to the error in a manner that allows the system to recover the One Tunnel so that data can be sent to the user via the downlink data tunnel, rather than losing the tunnel and requiring reestablishment of the user's connections. *See id.* at 6:24–7:50. In particular, the GGSN may receive an error indication from the RNC, which indicates that the downlink data tunnel has become invalid. *Id.* at 9:5-8; Fig. 2, step 201; Fig. 6, step 602. If the tunnel uses One Tunnel technology, the GGSN instructs the SGSN to recover the downlink data tunnel, rather than releasing the PDP context. *Id*. at 9:9-21; Fig. 2, step 201; Fig. 6, step 603. Therefore, rather than deactivating the user's PDP context and releasing all of the resources allocated to the user, which

would then require undergoing the entire process to re-establish communications for the user, the SGSN recovers (or "repairs") an invalid downlink data tunnel without the GGSN needing to release any of the information or resources allocated to the user. *See id.* The SGSN initiates a request to the RNC to begin a process that allows the GGSN to ultimately update its PDP context with the correct resource information for the downlink tunnel to the RNC. *Id.* at 9:22-46; Fig. 2, steps 202-204; Fig 6, steps 604a-605b. This exchange of information recovers the downlink data tunnel (rather than *re-establishing* a tunnel as in the prior art) and maintains the user's session with minimal impact on data transmission performance.

II. Disputed Terms and Proposed Constructions

A. "necessary data which is required when a user service processing is restored" | "necessary data" | "backup necessary data"

Asserted Claims	Term	Huawei's Construction	Defendants' Construction
1, 27 of '365 Patent	"necessary data which is required when a user service processing is restored"	"information necessary for the S-CSCF to handle traffic for a registered user, which includes at least a SIP URL of a P-CSCF assigned for a user device and a contact address of the user device"	"data used when restoring processing of the user service"
1, 27 of '365 Patent	"necessary data"	"information necessary for the S-CSCF to handle traffic for a registered user, which includes at least a SIP URL of a P-CSCF assigned for a user device and a contact address of the user device"	"data used when restoring processing of the user service"
27 of '365 Patent	"backup necessary data"	"information necessary for the S-CSCF to handle traffic for a registered user, which includes at least a SIP URL of a P-CSCF assigned for a user device and a contact address of the user device"	"data used when restoring processing of the user service"

The parties proposed identical constructions for all three of these terms in the '365 Patent, and thus the terms should be construed together. Huawei's proposed construction is correct because it captures the described improvement to the prior art. The '365 Patent explicitly describes what additional data is "necessary" to an S-CSCF for it to restore processing for a user service, and Huawei's construction includes that definition. Defendants' proposed construction, on the other hand, reads out the word "necessary," replacing it with the unduly broader word "used." Defendants are presumably trying to stretch the claims to cover prior art that the applicants do not purport to have invented.

The goal of the '365 Patent is to improve a network's reliability by directing the S-CSCF to back up additional data at a particular point during initial registration, which allows the network to maintain a user's connectivity in the event of a disaster tolerance event. *See supra* Section I(C)(1). The particular data that is stored is important to the invention because it is that data that allows this network component to maintain the user's connectivity—without this data, for example, a newly-assigned or restarted S-CSCF would be unable to direct a call to the UE via the P-CSCF. *See id.* There thus exists a need to construe the "necessary data" terms to ensure that the jury fully understands the claimed invention. *Power-One, Inc. v. Artesyn Techs., Inc.,* 599 F.3d 1343, 1348 (Fed. Cir. 2010) ("The [claim] terms, as construed by the court, must ensure that the jury fully understands the court's claim construction rulings and what the patentee covered by the claims.").

The '365 Patent explicitly defines what makes up the "necessary data" when it explains how the S-CSCF backs up certain data at the HSS, data that was not stored there in the prior art:

> In order to back up the necessary data which is required when the user service processing is restored on the HSS, an AVP [attribute-value pair] with an extended definition needs to be added in the SAR message, that is, AVP User-Backup-Data, and ***the AVP at least includes the following information***:

> ***A SIP URL of the P-CSCF*** through which the path of the user registration passes is adapted to address the P-CSCF when a called service is restored; ***and***
>
> ***A contact address of the user registration*** is adapted to address the user terminal when the called service is restored.

'365 Patent at 7:28-40 (emphasis added). By backing up the SIP URL of the P-CSCF to which a user device is assigned in the HSS where it can be restored, the S-CSCF does not need to wait until re-registration to obtain the address for the user's P-CSCF. *See id.* Similarly, storing a contact address of the user's device allows the newly-assigned S-CSCF (or the restarted S-CSCF) to contact and establish a connection to the user device. The '365 Patent describes how these two data elements thus serve as the key elements necessary over the prior art process for the S-CSCF to continue handling traffic for the user, such as routing a call invite to the user:

> After acquiring the subscription data and the backup data of the user, ***the S-CSCF2 restores the registration record of the called user, and forwards, according to the P-CSCF address and the contact address of the user*** provided in the backup data (9. INVITE), ***the session setup request*** to the P-CSCF with which the called user registers. Then, the session is continued.

'365 Patent at 13:59-65 (emphasis added). Thus, the '365 Patent defines what its claims mean by "necessary data." *See Phillips v. AWH Corp.*, 415 F.3d 1303, 1320-21 (Fed. Cir. 2005) (holding that a specification can define terms expressly or by implication) (quoting *Vitronics Corp. v. Conceptronic, Inc.*, 90 F.3d 1576, 1582 (Fed. Cir. 1996)). It is therefore vitally important that the jury understand the necessity of including these elements in the "necessary data" because without them, the invention would not work as conceived and described.

Defendants' proposed constructions read "necessary" out of the words of the claim. *See Maxwell v. J. Baker, Inc.*, 86 F.3d 1098, 1105 (Fed. Cir. 1996) (holding that a court cannot construe claims to read an express limitation out of the claim or render it meaningless). Defendants would define "necessary data" for restoring a user's session as merely "data that is used" for restoration.

This construction fails to capture the described invention because it would allow for less than all the data needed by the S-CSCF to be able to handle traffic for the user after a failure or restart. It also conflicts with other limitations in the claims. In Claim 1, for example, the S-CSCF retrieves not only the "necessary data" during restoration, but also a user's "subscription data." Subscription data is certain user profile information that is downloaded by the S-CSCF from the HSS in the prior art. *Id.* at 2:15-20; 11:12-19. Because the "subscription data" is "data used when restoring processing of the user service," Defendants' proposed construction recaptures the described prior art and renders the claimed "subscription data" redundant. *See, e.g.*, *GSK Techs. Inc. v. Eaton Elec. Inc.*, No. No. 6:06-cv-358, 2008 WL 906713, at *4 (E.D. Tex. Apr. 1, 2008) (refusing construction because it would render the definition redundant) (Davis, J.).

The inventors of the '365 Patent described the necessary data that would be stored and used in the claimed restoration process, and they explicitly set out that data in the specification. Huawei's proposed constructions are based on that explicit definition, and therefore, Huawei respectfully requests that the Court adopt its constructions.

B. "restoration data" | "restoring data"

Asserted Claims	Term	Huawei's Construction	Defendants' Construction
1, 4, 5, 7 of '617 Patent	"restoration data"	"information necessary for the S-CSCF to handle traffic for a registered user, which includes at least a SIP URL of a P-CSCF assigned for a user device and a contact address of the user device"	"data used when restoring processing of the user service"
5 of '617 Patent	"restoring data"	"information necessary for the S-CSCF to handle traffic for a registered user, which includes at least a SIP URL of a P-CSCF assigned for a user device and a contact address of the user device"	"data used when restoring processing of the user service"

The '617 Patent is a continuation of the '365 Patent, directed to the same inventive concept as the '365 Patent. The claims of the '617 Patent, however, do not refer to the user's data necessary for restoration as "necessary data." Instead, the claims use the terms "restoration data" or "restoring data." The parties appear to agree that these "restoration data" terms refer to the same concept claimed in the '365 Patent as "necessary data," and they should therefore have the same constructions. Indeed, Defendants have also proposed the same construction for the '617 Patent's terms as for the '365 Patent's.

Comparing claims of the '365 Patent and the '617 Patent highlights the identical nature of the "necessary data" in the former to the "restoration data" in the latter. In Claim 1 of the '365 Patent, the claim covers backing up ***necessary data*** and then uses "***subscription data*** of the user and the ***necessary data***" to restore the user's service. The "subscription data" is the data that the S-CSCF would request from the HSS in the prior art. *Id.* at 2:15-20. The "necessary data" is the data the inventors discovered could be advantageously backed up in the HSS to avoid relying upon the re-registration timer expiration process of the prior art. Similarly, in Claim 1 of the '617 Patent, the claim covers storing ***restoration data*** and then "sending a request for ***subscription data*** of the user and ***restoration data***" to restore the user's service. In both patents, there are two sets of data in the claim: subscription data and the previously backed up data required by the network components to restore the user's session. The '365 Patent refers to the latter data as necessary data, and the '617 Patent refers to it as restoration data, but both patents' claims cover the same concept. The '617 Patent's specification also supports Huawei's constructions because it notes that the "restoring data" must be acquired before the S-CSCF can restore service data to the user:

> ***After acquiring the restoring data*** of the disaster tolerance restoring user through any of the above manners, the S-CSCF restores the service data of the user, and restores a session processing of the user.

'617 Patent at 12:5-8 (emphasis added). The '617 Patent also includes the identical definition of the data that must necessarily be backed up in the HSS for the system to restore a user's session. *See id.* at 7:29-40. Accordingly, the restoration data in the '617 Patent's claims should be construed identically to the necessary data in the '365 Patent's claims to include a SIP URL of the user's P-CSCF and a contact address of the user terminal. Huawei therefore respectfully requests that the Court adopt Huawei's constructions for these terms.

C. "notifying, by the core network user plane anchor, a core network control plane to recover a downlink data tunnel" | "notification from a core network user plane anchor to recover a downlink data tunnel" | "notify a core network control plane to recover a downlink data tunnel" | "notification"

Asserted Claims	Term	Huawei's Construction	Defendants' Construction
1, 3 of '339 Patent	"notifying, by the core network user plane anchor, a core network control plane to recover a downlink data tunnel"	"the core network user plane anchor instructing a core network control plane to recover a downlink data tunnel"	"sending a notification message from the core network user plane anchor to a core network control plane to recover the tunnel between the core network user plane anchor and the access network device"
11 of '339 Patent	"notification from a core network user plane anchor to recover a downlink data tunnel"	"instruction from a core network user plane anchor to recover a downlink data tunnel"	"message from the core network user plane anchor to a core network control plane notifying the core network control plane to recover the tunnel between the core network user plane anchor and the access network device"
14 of '339 Patent	"notify a core network control plane to recover a downlink data tunnel"	"instruct a core network control plane to recover a downlink data tunnel"	"sending a notification message from the core network user plane anchor to a core network control plane to recover the tunnel between the core network user plane anchor and the access network device"

14 of '339 Patent	"notification"	"instruction to recover the downlink data tunnel"	"the notification message from the core network user plane anchor to a core network control plane to recover the tunnel between the core network user plane anchor and the access network device"

The "notify" terms need construction to help the jury understand precisely what is covered by the claims of the '339 Patent. *See Power-One,* 599 F.3d at 1348. Each of the limitations that include a form of "notify" involves the claimed core network user plane anchor (*e.g.*, a GGSN) directing the claimed core network control plane (*e.g.*, a SGSN) to recover a downlink data tunnel upon learning of an error. The plain language of the claim does not use "notify" in the abstract, but rather consistently refers to "notifying . . . ***to recover***." More specifically, the claim is directed to improving the prior art method for recovering a "***downlink*** data tunnel."

Construing "notify" to mean merely sending a "message," as Defendants suggest, leaves out the complete action of the claimed method. The core network user plane anchor does not simply inform the core network control plane of an error—that interpretation would not capture the complete solution to the problem the applicants identified. If that is all the claim limitation did, the system would still need to wait until the UE signals the SGSN after some delay to re-activate PDP contexts and re-establish the IP bearer. The claim however, requires "notifying . . . ***to recover***," which means that the core network user plane anchor affirmatively directs (*i.e.*, "instructs") the core network control plane to recover the downlink data tunnel. For this reason, the applicants used "notify" and "instruct" to refer to the same concept in the patent. *Compare* Claim 1 ("notifying") *with* Claim 9 ("configured to instruct"). Defendants' proposed constructions do not help explain this distinction for the jury because they "largely repeat[] the claim language and [are] not helpful to the factfinder." *Atticus Research Corp. v. VMware, Inc.*, No. H-11-1741,

2013 WL 3938516, at *15 (S.D. Tex. July 30, 2013); *see also Endotach LLC v. Cook Med. Inc.,* No. 1:12-cv-01630, 2013 WL 1500827, at *13 (S.D. Ind. Apr. 10, 2013) (rejecting a proposed construction because it "merely repeats what the patentee said with more words and is not helpful").

Furthermore, Defendants' proposed constructions read out "downlink" from the claim language. It appears that Defendants want to stretch the claims to read on any prior art method that re-establishes a tunnel that existed between the access network device (*e.g.*, an RNC) and a core network user plane anchor (*e.g.*, a GGSN). The applicants do not to claim to have invented all ways of re-establishing such a tunnel. Instead, they specifically recognized and solved a problem in the prior art in the way an invalid ***downlink*** tunnel—such as due to a reset of an the access network device (*e.g.*, an RNC)—was recognized and handled by core network user plane anchor (*e.g.*, a GGSN). Thus, here, the claims are directed at the core network user plane anchor (*e.g.*, a GGSN): (i) learning of an error in the data tunnel from the access network device; and (ii) in response, instructing the core network control plane (*e.g.*, an SGSN) to recover the "***downlink*** data tunnel"; and (iii) updating the PDP context with new information allocated for receiving "***downlink***" data. *See, e.g.*, '339 Patent at 4:49-65. The claims specifically refer to ***recovering*** the ***downlink*** data tunnel because the core network user plane anchor of the invention (*e.g.*, a GGSN) does not release (*i.e.*, it keeps) its PDP context containing, among other things, the tunnel resources allocated for receiving downlink information when One Tunnel technology is used. Keeping this context makes it possible for the node to "update" an "associated" PDP context with the ***downlink*** tunnel information. Defendants' proposed constructions seek to dispense with the claim's focus on recovering the downlink tunnel.

Huawei's proposed constructions are also fully supported by the claim language and the specification, and Huawei therefore respectfully requests that the Court adopt its constructions.

D. "is error"

Asserted Claims	Term	Huawei's Construction	Defendants' Construction
11 of '339 Patent	"is error"	"is invalid"	indefinite/incapable of construction

The term "is error" is simply the result of poor grammar. The mistake is evident from the face of the patent, and its correction is supported by the specification and prosecution history. The general rule regarding mistaken claim language is that "[t]he district court can correct an error only if the error is evident from the face of the patent." *Group One, Ltd. v. Hallmark Cards, Inc.*, 407 F.3d 1297, 1303 (Fed. Cir. 2005). Two additional requirements must be met to permit correction: "(1) the correction is not subject to reasonable debate based on consideration of the claim language and the specification and (2) the prosecution history does not suggest a different interpretation of the claims." *Novo Indus., L.P. v. Micro Molds Corp.*, 350 F.3d 1348, 1357 (Fed. Cir. 2003). If these conditions are satisfied, then the patent should not be invalidated based on the error unless there is "evidence of culpability or intent to deceive by delaying formal correction." *Hoffer v. Microsoft Corp.*, 405 F.3d 1326, 1331 (Fed. Cir. 2005). All three requirements are met here, and there is no evidence of culpability or intent to deceive.

First, "is error" is mistaken claim language that is evident from the face of the patent. In Claim 11 of the '339 Patent, the patent refers to a "receiving unit . . . configured to receive a notification from a core network user plane anchor to recover a downlink data tunnel if a user plane using a One Tunnel technology ***is error***"—"is error" in this context is grammatically incorrect. This mistake is evident from the face of the patent. *Compare Lemelson v. Gen. Mills, Inc.*, 968 F.2d 1202, 1203 & n.3 (Fed. Cir. 1992) (permitting correction of a patent by inserting the word "toy" in a claim where the patent on its face was clearly directed to a toy trackway rather than an actual trackway) *with Southwest Software, Inc. v. Harlequin, Inc.*, 226 F.3d 1280, 1291

(Fed. Cir. 2000) (prohibiting correction in district court to add multiple pages of software code that was missing from the patent due to a PTO error but the content of which could not be known by simply looking at the face of the patent lacking the code); *see also TracBeam, L.L.C. v. AT & T, Inc.,* No. 6:11-CV-96, 2013 WL 250532, at *18 (E.D. Tex. Jan. 23, 2013) (denying motion for summary judgment of indefiniteness by replacing the word "Mp" with "Mn" when the substitution was an obvious printing error).

Second, the correction for "is error" is not subject to reasonable debate based on the '339 Patent's claim language and specification: "is error" simply means "is invalid." *See id.* Nearly every reference to the need to recover a downlink data tunnel notes that the need to recover the tunnel is owed to an ***invalid*** downlink data tunnel for the user plane. *See, e.g.*, '339 Patent at Title ("recovering ***invalid*** downlink data tunnel"); *id.* at 2:30-32 ("the present invention is directed to a method for processing an ***invalidation*** of a downlink data tunnel between networks, which is capable of improving the speed of recovering a data transmission after the downlink data tunnel becomes ***invalid***"); *id.* at 3:24-25 ("[o]nce the downlink data tunnel becomes ***invalid***"); *id.* at 5:6-7 ("once the downlink data tunnel between the RNC and the GGSN ***is invalid***") (emphases added); *see Lemelson*, 968 F.2d at 1203; *GPNE Corp. v. Apple Inc.*, 830 F.3d 1365, 1370 (Fed. Cir. 2016) (holding that "when patent 'repeatedly and consistently' characterizes a claim term in a particular way, it is proper to construe the claim term in accordance with that characterization"). Additionally, the '339 Patent describes the error indication received by claimed components in the invention as relating to the invalidation of a downlink data tunnel:

> According the technical solutions of the embodiments of the present invention, ***the core network user plane anchor receives the error indication of data tunnel from a access network device***, and notifies a relevant core network control plane to request recovering the downlink data tunnel after determining that the user plane corresponding to the error indication uses the One Tunnel technology. . . . ***Once the downlink data tunnel becomes invalid***, the core network user plane anchor does

> not release the corresponding PDP context and notifies the core network control plane to reestablish the downlink data tunnel.

Id. at 3:15-27 (emphasis added). Accordingly, the error indication received by the core network user plane anchor is the signal that the downlink data tunnel is now invalid. *See id.*

Third, nothing in the prosecution history suggests a different interpretation of the claims. The prosecution history supports Huawei's interpretation because it consistently contains the same two "is error" mistakes in every submission by the applicant to the PTO—one in the original English-language specification, the other in the claim that issued as Claim 11. *See, e.g.*, PTO Patent Application, at ¶ 0014 (Jan. 24, 2012) [attached as Ex. A]; Original Claims, at 21 (Jan. 24, 2012) [attached as Ex. B]; Reply to Office Action, at 4 (Dec. 11, 2013) [attached as Ex. C].

The '339 Patent explicitly refers to recovery of invalid downlink data tunnels in its title, its specification, and the rest of its claim language. There is no indication that "a user plane . . . is error" is anything but a reference to an "invalid" user plane because of an invalid downlink data tunnel of the user plane. Therefore, Huawei respectfully requests that the Court correct this grammatical mistake and construe "is error" to mean "is invalid."

E. Alleged Means-Plus-Function Terms[5]

Asserted Claims	Term	Huawei's Construction	Defendants' Construction
9 of '339 Patent	"receiving unit . . . configured to receive an error indication of a data tunnel from an access network device	**Proposed Construction**: Plain and ordinary meaning. Not subject to 112, ¶ 6. If the Court determines this term is subject to 112, ¶ 6:	**Function**: receive an error notification of a data tunnel from an access network device and receive an update packet data protocol (PDP)

[5] Defendants did not timely disclose these allegedly "means-plus-function" under P.R. 3-3 and P.R. 4-1. (*See* Dkt. No. 110.) Defendants have moved for leave to amend their disclosures for good cause, but good cause does not exist. (*See id.*) Nonetheless, Huawei provides this argument in support of alternative constructions in the event the Court grants Defendants' motion for leave to amend.

	. . . [and] receive an update packet data protocol (PDP) context request from the core network control plane"	**Functions**: receive (i) an error indication of a data tunnel from an access network device followed by (ii) an update packet data protocol (PDP) context request from the core network control plane **Structure**: receiving unit 801 in Fig. 8 of a core network user plane anchor, and equivalents thereof	context request from the core network control plane **Structure**: The specification fails to set forth any algorithm or corresponding structure for the claimed function. Claim is indefinite.
9 of '339 Patent	"sending unit . . . configured to instruct a core network control plane to recover a downlink data tunnel if a user plane corresponding to the error indication uses a One Tunnel technology"	**Proposed Construction**: Plain and ordinary meaning. Not subject to 112, ¶ 6. If the Court determines this term is subject to 112, ¶ 6: **Functions**: instruct a core network control plane to recover a downlink data tunnel if a user plane corresponding to the error indication uses a One Tunnel technology **Structure**: sending unit 802 in Fig. 8 of a core network user plane anchor, and equivalents thereof	**Function**: instruct a core network control plane to recover a downlink data tunnel if a user plane corresponding to the error indication uses a One Tunnel technology **Structure**: The specification fails to set forth any algorithm or corresponding structure for the claimed function. Claim is indefinite.
9 of '339 Patent	"storage unit configured to update a corresponding PDP context according to the update PDP context request"	**Proposed Construction**: Plain and ordinary meaning. Not subject to 112, ¶ 6. If the Court determines this term is subject to 112, ¶ 6: **Functions**: update a corresponding PDP context according to the update PDP context request **Structure**: storage unit 803 in Fig. 8 of a core network user plane anchor, and equivalents thereof	**Function**: update a corresponding PDP context according to the update PDP context request **Structure**: The specification fails to set forth any algorithm or corresponding structure for the claimed function. Claim is indefinite.
11 of '339 Patent	"receiving unit . . . configured	**Proposed Construction**:	**Function**: receive a notification from a core

	to receive a notification from a core network user plane anchor to recover a downlink data tunnel if a user plane using a One Tunnel technology is error"	Plain and ordinary meaning. Not subject to 112, ¶ 6. If the Court determines this term is subject to 112, ¶ 6: **Functions**: receive a notification from a core network user plane anchor to recover a downlink data tunnel if a user plane using a One Tunnel technology [is error] **Structure**: receiving unit 801 in Fig. 8 of a core network user plane anchor, and equivalents thereof	network user plane anchor to recover a downlink data tunnel if a user plane using a One Tunnel technology is error **Structure**: The specification fails to set forth any algorithm or corresponding structure for the claimed function. Claim is indefinite.
11 of '339 Patent	"sending unit . . . configured to send a radio access bearer (RAB) assignment request to an access network device . . . and . . . send an update packet data protocol PDP context request to the core network user plane anchor to update corresponding PDP context"	**Proposed Construction**: Plain and ordinary meaning. Not subject to 112, ¶ 6. If the Court determines this term is subject to 112, ¶ 6: **Functions**: send (i) a radio access bearer (RAB) assignment request to an access network device followed by (ii) an update packet data protocol PDP context request to the core network user plane anchor to update corresponding PDP context **Structure**: sending unit 802 in Fig. 8 of a core network user plane anchor, and equivalents thereof	**Function**: send a radio access bearer (RAB) assignment request to an access network device and send an update packet data protocol PDP context request to the core network user plane anchor to update corresponding PDP context **Structure**: The specification fails to set forth any algorithm or corresponding structure for the claimed function. Claim is indefinite.

1. *Defendants cannot overcome the presumption against "means-plus-function."*

Consistent with this Court's precedent, the claimed "configured to" terms in the '339 Patent should be construed according to their plain meaning and are not subject to construction under 35 U.S.C. § 112, ¶ 6. At the outset, none of these terms use the "means for" language. Instead, each of these terms use simple, well-understood terms in the networking and communications arts, such

as a "receiving unit," "sending unit," and "storage unit," and additionally include clauses describing how these structures are "configured to" interact by receiving, sending, or storing and what types of data they exchange or store/update. Each of these terms are described as being structurally within a larger network component (such as a GGSN or SGSN communication device) that must include those structures to achieve their purpose. In short, Defendants cannot overcome the legal presumption against § 112, ¶ 6 construction, and therefore each of these terms should be given its plain meaning in the art. *See Personalized Media Commc'ns, LLC v. Int'l Trade Comm'n*, 161 F.3d 696, 704 (Fed. Cir. 1998). The claim terms at issue are all of a similar form and should be considered together.

Because none of the disputed terms use the word "means," they are presumptively not subject to § 112, ¶ 6 construction. *See Personalized Media,* 161 F.3d at 704; *see also Uniloc USA, Inc. v. Autodesk, Inc.*, No. 2:15-CV-1187-JRG-RSP, 2016 WL 3647977, at *5 (E.D. Tex. July 7, 2016). ("There is a rebuttable presumption that § 112, ¶ 6 applies when the claim language includes 'means' or 'step for' terms, and that it does not apply in the absence of those terms."). The burden of rebutting that presumption falls on Defendants. *See Williamson v. Citrix Online, LLC*, 792 F.3d 1339, 1348 (Fed. Cir. 2015) (en banc). In particular, under *Williamson*, the presumption can only be rebutted the claim term fails to "'recite[ ] sufficiently definite structure' or else recites function without reciting sufficient structure for performing that structure.'" *Id.* (quoting *Watts v. XL Sys., Inc.*, 232 F.3d 877, 880 (Fed. Cir. 2000)). Defendants cannot overcome the legal presumption because "the claim language, read in light of the specification, recites sufficiently definite structure" for these apparatus claims. *Media Rights Techs., Inc. v. Capital One Fin. Corp.*, 800 F.3d 1366, 1372 (Fed. Cir. 2015) (quoting *Robert Bosch, LLC v. Snap-On Inc.*, 769 F.3d 1094, 1099 (Fed. Cir. 2014)).

Here, the intrinsic evidence demonstrates that persons of ordinary skill in the art would readily understand the necessary structure of the receiving unit, sending unit, and storage unit of the claimed communications device such as a SGSN or GGSN. For example, the patent explains that Fig. 7 is "a schematic structural view of a system according to an embodiment of the present invention" and Fig. 8 is "a schematic structural view of a device according to an embodiment of the present invention." '339 Patent at 3:54-57. As seen below, Fig. 7 identifies the connections between the communication devices in the claimed system, and Fig. 8 identifies the connections between a "receiving unit," "sending unit," and "storage unit" in the communication device:

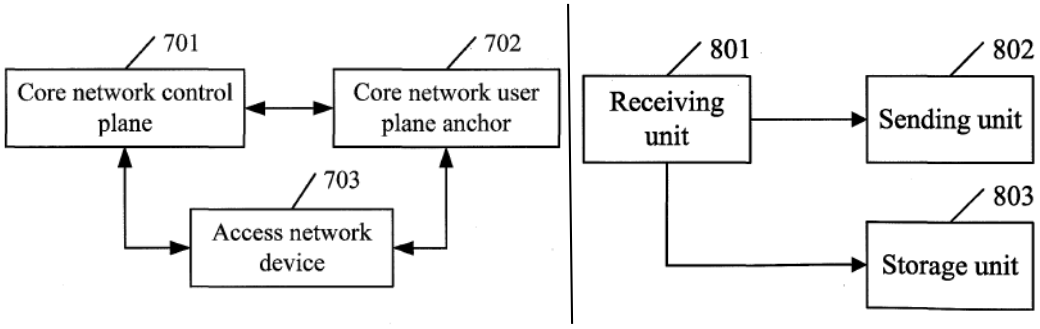


FIG. 7 FIG. 8

The specification explains that these components "can be implemented by means of software plus a necessary universal hardware platform, which definitely can also be implemented by hardware." *Id.* at 11:23-26.

The full claim limitations describe the inputs and outputs of these components, and what it is that they "receive," "send," or "update" in storage, respectively. And as this Court explained in *E2E*, § 112, ¶ 6 does not apply when the written description provides context as to the "inputs and outputs" and how the claimed components "interact[] with other components . . . in a way that . . . inform[s] the structural character of the limitation-in-question or otherwise impart[s] structure." *See E2E Processing, Inc. v. Cabela's Inc.*, No. 2:14-cv-36, 2015 WL 4051423, at *6 (E.D. Tex. July 2, 2015) (Payne, M.J.) (quoting *Williamson*, 792 F. 3d at 1351). For example, in Claim 9, the "receiving unit" is "configured to receive an error indication of a data tunnel from an access

network device . . . [and] receive an update packet data protocol (PDP) context request from the core network control plane"; the "sending unit" is "configured to instruct a core network control plane to recover a downlink data tunnel if a user plane corresponding to the error indication uses a One Tunnel technology"; and the "storage unit" is "configured to update a corresponding PDP context according to the update PDP context request." '339 Patent at Claim 9. Thus, the claim limitations alone recite sufficiently definite structure for these terms.112, ¶ 6. F. 3d at 1351).; *see Williamson*, 792 F.3d at 1351 (holding a claim is not means-plus-function if it "describe[s] how the [device] interacts with other components . . . in a way that might inform the structural character of the limitation–in-question or otherwise impart structure to the [device] as recited in the claim").

Just because an apparatus claim recites structures using functional terms, such as structures "configured to" perform certain functions with data, does not necessarily subject these terms to § 112, ¶ 6. *See Chrimar Sys., Inc. v. Adtran, Inc.*, No. 6:15-CV-618-JRG-JDL, 2016 WL 3382028, at *8 (E.D. Tex. June 20, 2016) ("§ 112, ¶ 6 does not apply to all functional claim language.") (Love, M.J.). As explained in *Chrimar*, where this Court found similarly-worded "configured to" terms not subject to construction under § 112, ¶ 6: "Where a claim term has an understood meaning in the art, it recites sufficient structure." *Id.* at *9.

In sum, the intrinsic evidence demonstrates that the claim language, read in light of the specification, recites sufficiently definite structure to a person of ordinary skill in the art and thus is not subject to § 112, ¶ 6 construction. *See Chrimar*, 2016 WL 3382028, at *9.

2. *The '339 Patent recites sufficient structure for the terms.*

Even if these terms are construed under § 112, ¶ 6, however, the written description sets forth sufficient structure to perform their function, as explained above, and they should be construed to have functions consistent with their plain meaning, *i.e.*, consistent with the functional language that follows the words "configured to" in the claim. *See* Dkt. No. 110-C.

Generally, "in a means-plus-function claim 'in which the disclosed structure is a computer, or microprocessor, programmed to carry out an algorithm, the disclosed structure is not the general purpose computer, but rather the special purpose computer programmed to perform the disclosed algorithm.'" *Aristocrat Techs. Australia Pty Ltd. v. Int'l Game Tech.*, 521 F.3d 1328, 1333 (Fed. Cir. 2008) (quoting *WMS Gaming, Inc. v. Int'l Game Tech.*, 184 F.3d 1339, 1349 (Fed. Cir. 1999)). The specification can express the algorithm "in any understandable terms including as a mathematical formula, in prose, or as a flow chart, or in any other manner that provides sufficient structure." *Finisar Corp. v. DirecTV Grp., Inc.*, 523 F.3d 1323, 1340 (Fed. Cir. 2008) (internal citation omitted); *see also Williamson*, 792 F.3d at 1351.

Here, the claim language describing how the components are configured provides all that is necessary to describe sufficient structure for the terms. The "receiving unit" receives, the "sending unit" sends, and the "storage unit" updates. Contrary to Defendants' contention, any further definition of these disputed terms is of little importance to the claimed invention because what matters is what the components do and how they interact. That is, what is claimed here is a communication device with a receiving unit, sending unit, and storage unit (*e.g.*, a GGSN or SGSN) configured to receive, send, and update in an inventive way. *See Chimar*, 2016 WL 3382028, at *9 (finding sufficient structure because what is claimed is not an inventive "end device" but a known "end device" configured in an inventive way).

The claims of the '339 Patent describe these components and how they interact in sufficient detail to impart the requisite structure. *See Williamson,* 792 F.3d at 1351. Accordingly, the terms are not indefinite.

III. CONCLUSION

For the foregoing reasons, Huawei respectfully requests that its positions be adopted.

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Respectfully submitted,

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CERTIFICATE OF SERVICE

I hereby certify that a true and correct copy of the above and foregoing document has been served on January 17, 2017 to all counsel of record who are deemed to have consented to electronic service via the Court's CM/ECF system per Local Rule CV-5(a)(3).

/s/ David Barkan
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